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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,830	11/13/2000	Brian J. Minnis	PHB 34,414	5784

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EXAMINER

WANG, TED M

ART UNIT	PAPER NUMBER
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2634

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/710,830

Applicant(s)

MINNIS ET AL.

Examiner

Ted M Wang

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 and 6-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 7-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-4 and 7-12 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kianush et al. (US 5,715,529) in view of Davie et al. (US 6,278,870) and Durvaux et al. (US 5,703,910).

- In regard claim 1, Kianush et al. discloses FM receiver including a phase-quadrature polyphase IF filter that quadrature related low IF signals (Fig.1 element M2 and column 4 lines 42-46) are soft limited (Fig.1 elements AL and IF2, and column 5 line 35 – column 6 line 46) for adjusting the dynamic range of the quadrature related low IF signals (Fig.1 elements IF2 and TC) prior to being demodulated (Fig.1 element DEM and column 6 lines 41-46, and column 5 lines

21-34), and said receiver comprising, coupled to inputs of a polyphase filter (Fig.1 element RA1 and column 4 line 57 – column 5 line 6).

Kianush et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching that the polyphase filter is an image rejection filter and a soft limiting amplifier is located prior to demodulator.

However, Davie et al. teaches a phasing receiver by implementing an image rejection filter with a polyphase filter (Fig.1 element 24 and column 2 lines 19-52).

Durvaux et al. teaches a soft limiting amplifier (Fig.1 element SL or LOG linear amp and column 7 line 49 – column 8 line 14) is located prior to demodulation (Fig.1 element DM and column 8 lines 15-40).

It is desirable to implement an image rejection filter as a polyphase filter so as to improve the image rejection capability of a phasing receiver (column 1 lines 40-62) and place a soft limiting amplifier prior to demodulator so as to reduce the bit error rate (abstract lines 1-20 and column 4 line 65 – column 5 line 5). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an image rejection filter as a polyphase filter as taught by Davie et al. and place a soft limiting amplifier prior to demodulator as taught by Durvaux et al. into Kianush's receiver circuit (polyphase filter circuit and soft limiting circuit) in order to improve the image rejection capability of a phasing receiver and reduce the bit error rate.

- In regard claim 2, Kianush et al. discloses a FM receiver including a phase-quadrature polyphase IF filter for receiving a wanted data signal modulated on a

carrier signal (Fig.1 column 4 lines 15-41) and for producing quadrature related low IF signals (Fig.1 element M2 and column 4 lines 42-46), soft limiting means for compressing the dynamic range of the quadrature related low IF signals (Fig.1 elements AL and IF2, and column 5 line35 – column 6 line 46) and signal demodulation means for recovering the data signal (Fig.1 element DEM and column 6 lines 41-46, and column 5 lines 21-34). All other limitation can further be taught in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

- In regard claim 3, Kianush et al. further discloses the limitation of receiver further including signal demodulation means for recovering the data signal can further be taught in Fig.1 element DEM and column 6 lines 57-64.
- In regard claim 4, all limitation is contained in claim 2. The explanation of all the limitation is already addressed in the above paragraph.
- In regard claim 7, Kianush et al. further disclose a data filter (Fig.1 element LPF and column 6 lines 41-64) except for specifically teaching that the signal demodulation comprises a polyphase discriminator.

However, Durvaux et al. teaches the signal demodulation comprises a polyphase discriminator (column 1 lines 34-55, column 2 lines 4-10, and column 4 lines 3-7). It is desirable having a signal demodulation comprises a polyphase discriminator so as to improve the implementation complexity (column 4 lines 3-7). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include a signal demodulation as taught by Davie et al. in

which, the signal demodulation comprises a polyphase discriminator, into Kianush et al. and Davies' demodulator circuit in order to improve the implementation complexity.

4. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kianush et al. (US 5,715,529) and Davie et al. (US 6,278,870) and Durvaux et al. (US 5,703,910) as applied to claims 1 and 2 above, and further in view of Bijker et al. (US 5,404,589).

- In regard claim 8, Kianush et al., Davie et al., and Durvaux et al. disclose all of the subject matter as described in the above paragraph except for specifically teaching a polyphase receiver that the soft limiting means have a characteristic which is substantially linear at signal levels 10dB below a predetermined minimum wanted signal level, moves into compression for higher signal levels and hard limits at substantially 10 dB above the desired receiver sensitivity.

However, Bijker et al. teaches a polyphase receiver that the soft limiting means have a characteristic which is substantially linear at signal levels 10dB below a predetermined minimum wanted signal level, moves into compression for higher signal levels and hard limits at substantially 10 dB above the desired receiver sensitivity (Fig. 3 and column 5 line 58 – column 6 line 8, and column 6 line 28 – column 21).

It is desirable to a polyphase receiver that the soft limiting means have a characteristic which is substantially linear at signal levels 10dB below a predetermined minimum wanted signal level, moves into compression for higher

signal levels and hard limits at substantially 10 dB above the desired receiver sensitivity so as to improve the Signal to Noise Ratio (SNR).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an polyphase receiver as taught by Bijker et al. in which, a polyphase receiver that the soft limiting means have a characteristic which is substantially linear at signal levels 10dB below a predetermined minimum wanted signal level, moves into compression for higher signal levels and hard limits at substantially 10 dB above the desired receiver sensitivity, into Kianush et al., Davie et al., and Durvauxs' soft limiting circuit in order to improve the Signal to Noise Ratio (SNR).

- With regard claim 9, Kianush et al., Davie et al., and Durvaux et al. disclose all of the subject matter as described in the above paragraph except for specifically teaching that the polyphase receiver is integratable.

However, Bijker et al. teaches that the polyphase receiver is integratable (column 3 lines 21-44).

It is desirable that the polyphase receiver is so as to reduce the product cost.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an polyphase receiver as taught by Bijker et al. in which, the polyphase receiver is integratable, into Kianush et al., Davie et al., and Durvauxs' receiver in order to reduce the product cost.

- With regard claim 10, Kianush et al. further discloses a transmitter (column 3 lines 4-22).

5. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kianush et al. (US 5,715,529) and Davie et al. (US 6,278,870) and Durvaux et al. (US 5,703,910) as applied to claims 1 and 2 above, and further in view of Haartsen (US 6,081,697).

- In regard claim 11, Kianush et al., Davie et al., and Durvaux et al. disclose all of the subject matter as described in the above paragraph except for specifically teaching amplifying means comprises separate, respective amplification means for said inputs.

However, Haartsen et al. teaches the amplifying means comprises separate, respective amplification means for said inputs (Fig. 2 elements 250 and 295, column 5 lines 4-35, and Fig.3 elements 340 and 390).

It is desirable to include the limitation of amplifying means comprises separate, respective amplification means for said inputs so as to improve image rejection (column 2 lines 49-59).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include an polyphase receiver as taught by Haartsen et al. in which, the amplifying means comprises separate, respective amplification, into Kianush et al., Davie et al., and Durvauxs' receiver in order to improve the image rejection.

- In regard claim 12, all limitation is contained in claim 2 and 11. The explanation of all the limitation is already addressed in the above paragraph.

Allowable Subject Matter

6. Claim 6 is allowed.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M Wang whose telephone number is (571) 272-3053. The examiner can normally be reached on 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571) 272-3056. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Application/Control Number: 09/710,830
Art Unit: 2634

Page 9

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-0377.

Ted M Wang
Examiner
Art Unit 2634

Ted M. Wang

A handwritten signature in black ink, appearing to read "Shuwang Liu".

SHUWANG LIU
PRIMARY EXAMINER